

REMARKS

Consideration of the previously filed IDS is respectfully requested. Since an RCE is being filed, no certification is required. Also, it will be noted that the statement in the prior Office Action that none of the information had been considered was clearly inaccurate. Eight of the 12 listed references are also described in the specification and the corresponding US publication of another of the references has been acknowledged. Another art listing form for the convenience of the Examiner is submitted herewith.

Applicants appreciate the Examiner's indication that the April 2008 IDS was proper and has been considered.

Applicants also appreciate the Examiner's acknowledgement that the objection to the specification was not valid. The layout has been reviewed and no further changes are deemed appropriate. As a parenthetical, the comment about the Office adding headings when the case is found allowable is not understood in that the Office has no authority to add such headings without applicants' prior approval.

In reviewing the pending claims, it was noted that one of the claims still included both a broad range and a subrange. That subrange has been deleted.

It is respectfully submitted that the rejection of claim 24 under 35 USC § 112 is moot in light of the foregoing amendment. A corresponding change has been made to claims 6 and 7.

By the foregoing amendments, claims 1 and 16 have been combined. Claim 19 has been similarly amended. New claim 28 finds basis in claims 7 and 15.

Claims 1-4, 6, 7, 9, 12, 13, 15, 16, 18, 19, 22, and 24-27 were rejected under 35 U.S.C. § 103 over Jensen in view of Tooley. This rejection is respectfully traversed.

Jensen relates to man-made vitreous fibers (MMVF) which are durable in use, have a solubility in biologic fluid which is considered to be acceptable, and which can be made from readily-available materials, generally rocks or minerals, to give a desired analysis. If desired, the charge can be in the form of briquettes. As the Office Action recognizes, Jensen does not disclose the use of any non-virgin rock material in forming the briquettes.

In practice, the preferred material for inclusion of phosphorous in the MMVF is the virgin rock apatite. The most commonly used form is flouroapatite, although chloroapatite is also used. Both introduce halogen into the process and this requires that the halogen be dealt with to avoid release of undesirable waste materials during the production process. In addition, the virgin rock apatite tends to result in less than 100% of the phosphorous in the apatite finding its way into the melt and hence the final fibers. That in turn has the problem that the phosphorous which does not transfer to the melt can transfer to the molten iron slag which is released from the furnace. Despite these disadvantages, virgin rock apatite is still the preferred material for providing phosphorous to the MMVF.

Tooley is an excerpt of two pages from an obviously much longer handbook relating to glass manufacture. It contains a Table III B-II which contains a reference to bone ash to supply calcium and phosphorous oxides in making some type of glass which is not revealed in this excerpt. Neither the portion of the handbook which

describes what this Table purports to show nor the pages discussing any of the materials set forth in that Table (and more specifically bone ash) have been included in material excerpted. [Copies of any such pages are respectfully requested.] All that can be said about this Table is that it has something to do with raw materials used in some type of glass making but clearly it does not teach or suggest the use of bone ash in MMVF production. Had it done so, the Office Action would have undoubtedly included the pages in this reference making such a disclosure. Nevertheless, the Office Action takes the position that it would have been obvious to use bone ash as a source of phosphorous, depending on the availability/source of other sources of phosphorous, because it is the only principal raw material indicated in that Table which contains phosphorous. While the contention has a superficial attractiveness, it cannot resist analysis.

First, and in a broad context, the failure of the Office Action to cite any type of non-virgin material being used in MMVP production makes the contention that any particular type of non-virgin material is obvious to use questionable. Secondly, despite the fact that Tooley lists bone ash as a principal raw material containing phosphorous, the art actually uses virgin rock apatite as the MMVF phosphorous source. In addition, it uses the apatite despite the fact that it introduces halogen into the process and is less than 100% efficient in transferring the phosphorous in the apatite into the melt and hence the final fibers. If it were obvious to substitute the bone ash for the apatite, it is not comprehensible why it has not been previously done and these disadvantages of using apatite avoided.

In addition, the use of particulates in a shaft furnace is contraindicated because such furnaces are not adapted to handle a fine powder. As a result, all fine material must be compacted before they are used in such furnaces. The inclusion of small particle size phosphorous-containing materials in a briquette is also contraindicated because that is expected to have detrimental effects on the strength of the briquettes and it is important that the briquettes have adequate strength in a shaft furnace where they form a part of a stack of mineral materials. The materials in a briquette are held together with a cement and it is well known that phosphorous oxide is a retarder for cement. See, e.g., the attached product data sheet. A particulate has a high surface area, a characteristic which increases the release rate of the phosphorous oxide from the powder. For a briquetting process to be practical, the required briquette strength must be exhibited within a reasonable short period of say about three days, preferably after two days, but a material which releases the phosphorous oxide retarder easily would be expected not to develop sufficient strength until at least about four weeks of curing. Bone ash is a phosphorous-containing particulate and subject to all of these deficiencies. In contrast, materials which are not in particulate form, such as the rock apatite, do not suffer from these disadvantages. Moreover, the rock apatite can be used without the need to form briquettes, thus not only avoiding the inordinate time that it requires to make the briquettes but also the cost of making them. The fact that bone ash can be successfully used and does not suffer from these expected deficiencies is not predictable.

In light of all of the foregoing, it was clearly not obvious to substitute any particulate non-virgin material, and more particularly sewage sludge ash, bone meal ash, granulated sewage sludge slag and mixtures thereof, for a virgin rock material such

as apatite. The fact that one could do so and obtain briquettes in a relatively short period of time of, say, three days, while avoiding the disadvantages of the virgin rock material was not predictable.

Claims 1, 5, 16, and 18 were rejected under 35 U.S.C. § 103 over Jensen in view of Perander and Kaneko and claims 1, 5, 9, 16, and 11 were rejected under 35 U.S.C. § 103 over Jensen in view of Perander and Juul. Both of these rejections are respectfully traversed.

Jensen has been discussed above. Perander has been cited only for its teaching of making briquettes for mineral wool production but that is already disclosed in Jensen.

Kaneko teaches production of slag wool in a rotary melting furnace by adding a calcium component adjusting agent to sewage sludge slag and then forming the mixture into fibers. Kaneko does not teach or suggest the use of sewage sludge in ash or granulated form, and therefore does not address the considerations about the use of a phosphorous-containing particulate discussed above. It also does not teach or suggest incorporating non-particulate sewage sludge slag into a briquette and the only basis for asserting that it would is an after-the-fact hindsight conclusion after having read and understood the instant application. Further, it is well known that sewage sludge exhibits puzzolanic curing which means it exhibits a very slow curing speed and might only develop the same strength as a hydraulic binder after several weeks.

Juul teaches that a glass produced from various raw materials including sludge can, after mineralization be pressed into briquettes that are hardened and

subsequently melted. Like Kaneko, it does not suggest use of a particulate sludge. The object of Juul is to produce a glass that can be used more efficiently in waste disposal areas without, at the same time, producing deposit material containing environmental harmful and hazardous substances. It does not cure any of the deficiencies in Perlander or Jensen.

Claim 17 was rejected under 35 U.S.C. § 103 over Jensen in view of Perlander and either Juul or Kaneko in further view of Sims. The base combination of references has been discussed above. Sims has been cited only for teaching that some waste products yield metals when melted as a predicate for the assertion that it would be obvious to separate any iron that is generated by the process. Thus, Sims is not asserted to cure any of the basic deficiencies in the combination of the other references and in fact does not do so.

Claim 19 was rejected under 35 U.S.C. § 102 as anticipated by Jensen. This rejection is predicated on the fact that Jensen has no teaching about sewage sludge ash and therefore the content of such as is 0%, which is not more than 20% as recited in the claim. However, the claim always recited that the briquettes comprise sewage sludge which means that some amount of sewage sludge was present and it was not permissible to read this claim as including the total absence of the ash. In order to avoid this misinterpretation of the claim, it has been amended to more particularly state that the sewage sludge ash is present in a positive amount, i.e., greater than 0%. Since Jensen is totally silent about sewage sludge ash, it cannot anticipate or render this claim obvious.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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